

Notice of Allowability

Application No.

09/678,183

Examiner

Jeffrey R. West

Applicant(s)

SCHOCH ET AL.

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the After Final Response filed 31 August 2004.
2. ☒ The allowed claim(s) is/are 1-15 and 20-26.
3. ☒ The drawings filed on 2/27/03 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

HALVACHSMAN
PRIMARY EXAMINER
4.12.05

DETAILED ACTION

Drawings

1. The informal drawings filed February 24, 2003, have been accepted by the Examiner. Applicant is required to furnish corresponding formal drawings in response to this Action.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
3. Authorization for this examiner's amendment was given in a telephone interview with Randall J. Knuth on September 22, 2004.
4. The application has been amended as follows:

In claim 2, line 3, "the appropriate variable" has been changed to ---an appropriate variable---.

In claim 2, line 5, "the appropriate variable" has been changed to ---an appropriate variable---.

In claim 2, line 7, "the appropriate variable" has been changed to ---an appropriate variable---.

In claim 2, line 9, "the appropriate variable" has been changed to ---an appropriate variable---.

In claim 5, line 10, "the slide downstroke" has been changed to ---a slide downstroke---.

In claim 5, line 12, "the slide upstroke" has been changed to ---a slide upstroke---.

In claim 5, line 14, "identifying the points on the theoretical slide" has been changed to ---identifying points on the theoretical no load slide---.

In claim 5, line 17, "identifying the points" has been changed to ---identifying points---.

In claim 5, line 23, "can be" has been changed to ---are---.

In claim 6, line 4, "the press" has been changed to ---the mechanical press---.

In claim 6, line 16, "theoretical distance" has been changed to ---theoretical no load distance---.

In claim 6, line 19, "theoretical distance" has been changed to ---theoretical no load distance---.

In claim 12, line 3, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 12, line 7, "the sum" has been changed to ---a sum---.

In claim 12, line 8, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 12, line 12, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 12, line 15, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 13, lines 10-11, "the relevant" has been changed to ---a relevant---.

In claim 14, line 3, "the distance" has been changed to ---a distance---.

In claim 20, lines 6-7, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 20, line 10, "theoretical slide" has been changed to ---theoretical no load slide---.

In claim 20, line 18, "the contact point" has been changed to ---a contact point---.

In claim 20, line 20, "the stock material" has been changed to ---a stock material--

In claim 20, line 21, "the slide downstroke" has been changed to ---a slide downstroke---.

In claim 20, line 23, "the slide upstroke" has been changed to ---a slide upstroke--

In claim 20, line 25, "identifying the points on the theoretical slide" has been changed to ---identifying points on the theoretical no load slide---.

In claim 20, line 27, "identifying the points" has been changed to ---identifying points---.

In claim 20, line 34, "can be" has been changed to ---are---.

In claim 25, line 2, "the load" has been changed to ---a load---.

In claim 25, line 3, "the speed" has been changed to ---a speed---.

In claim 25, line 17, "deflection by the value" has been changed to ---deflection by a value---.

Allowable Subject Matter

5. Claims 1-15 and 20-26 are considered to be allowable over the cited prior art for the following reasons.

With respect to independent claims 1, 3, and 20, U.S. Patent No. Re. 34,559 to Mickowski discloses a diagnostic method for analyzing and monitoring the process parameters in the operation of reciprocating equipment comprising a microprocessor in communication with a non-volatile memory, input device, display, and transducers (column 3, lines 61-68 and Figure 1) wherein the transducers sense and supply velocity data, that can be representative of time increments (column 6, lines 30-31), to the microprocessor (column 4, lines 1-5) as a function of stroke position (i.e. ram/slide displacement above dead bottom center) during a production cycle (column 4, lines 23-33). Mickowski also discloses inputting the velocity data to the microprocessor (column 7, lines 29-37 and 53-56), storing the data to determine the current displacement profile (column 2, lines 51-55) and plotting, on the display, the velocity as a function of displacement and a superimposed theoretical profile in order to compare the actual and theoretical curves at any individual point of displacement (column 4, lines 46-50 and 57-66). Mickowski also discloses obtaining, and plotting,

the pressure/load data vs. displacement (column 5, lines 55-60) as well as the displacement vs. each increment of time (i.e. count quantity) in a stroke (column 6, lines 26-31 and column 7, lines 11-18).

While Mickowski teaches many of the features of the claimed invention, Mickowski does not disclose that the theoretical curve is under no-load conditions. Applicant, in the response filed August 31, 2004, defined the differences between actual and theoretical no-load conditions as "the theoretical no load slide displacement curve and actual (loaded) slide displacement curve both relate to the same machine configuration, except that the theoretical curve pertains to no-loading (i.e., the tooling die assembly has not been mounted to the slide) while the actual curve pertains to loading (i.e., the tooling die assemble has been mounted to the slide)."

Since Mickowski does not define the theoretical curve as corresponding to a curve wherein the tooling die assemble has not been mounted to the slide, Mickowski cannot anticipate the claims. Further, the invention of Mickowski states that the theoretical/master profile "is used for comparison for purposes with a 'current' profile. A current profile is defined as a profile trace formed on the CRT form data received by the microprocessor from one of the transducers in response to a current production cycle. . . By providing this ability to superimpose master profiles over a current profiles, a non-technically trained person can readily distinguish between a master trace identifying a production run classified as acceptable or good and the current production run representing the current profile. It also becomes

readily apparent to the operator where and to what extent adjustment may be necessary to conform subsequent production runs to the master trace" (column 4, line 64 to column 5, line 16).

Therefore, the invention of Mickowski explicitly teaches away from any comparison to/generation of a theoretical no-load displacement curve because without a comparison between a current trace to an ideal trace under the same loading conditions, the purpose of the invention of Mickowski is destroyed.

With respect to independent claims 5 and 20, U.S. Patent No. 3,869,927 to Lose et al. discloses a geared drag link-slider-crank press, and a corresponding method of use, comprising generating a theoretical slide displacement curve for the press, and plotting this slide displacement vs. crank angle (column 7, lines 27-37 and Figure 3), generating an actual slide displacement curve during load conditions of the press, and plotting this slide displacement vs. crank angle (column 8, lines 21-23 and Figure 4), determining a contact point on the actual slide displacement curve which corresponds to the slide contacting the stock material (i.e. begin work point) (column 1, lines 15-20 and Figure 11), establishing a start point on the slide downstroke between top dead center and the contact point, establishing an end point on the slide upstroke between top dead center and the contact point (i.e. slow points) (column 3, lines 23-31). Lose also discloses that the first plot for displaying the actual slide displacement curve and the second plot for displaying the expected theoretical displacement are for comparing the two graphs to indicate the

performance of the press (column 8, lines 21-24). Also, as shown by Figures 4 and 11, the contact point is established as a first determined inflection point on the actual slide displacement curve.

U.S. Patent No. 5,997,778 to Bulgrin teaches an auto-tuned, adaptive process controlled, injection molding machine including a user console for inputting a plurality of set points (column 9, lines 30-37), a non-contact position sensor for sensing the position of the slide (column 9, lines 37-40), a non-contact load sensor for sensing the load of the slide (column 9, lines 53-59), and a screen for displaying a "no load" velocity profile superimposed with a corresponding actual velocity profile and the plurality of setpoints to determine the performance of the press (column 6, lines 24-28, column 9, line 64 to column 10, line 8, column 10, lines 35-53).

First, with respect to the invention of Lose, similar to the inadequacies of the invention of Mickowski, the invention of Lose explicitly teaches away from any proposed modification of comparison to/generation of a theoretical curve under no load conditions, as defined by Applicant as a tooling die assembly not mounted to the slide, because the purpose of the invention of Lose is to compare the performance of a crank press under different loading conditions and a comparison between an actual loaded and theoretical unloaded would destroy the intent of Lose.

Further, with respect to the invention of Bulgrin, the invention is only concerned with velocity plots wherein the velocity plots are only with respect to a downstroke of a press and have no concern, or reasonable motivation for modification, with respect

displacement or to the corresponding upstroke as required by, at least, claims 5 and 20.

Claims 25 and 26 are further considered to be allowable over the cited prior art because while many of the cited patents teaches particular limitations of claim 25, there is no reasonable expectation of success in creating such an elaborate combination or modifying the displacement curves to correspond to conditions where the tooling die assembly has not been mounted to the slide (i.e. unloaded). Moreover, no cited reference teaches or suggests, in combination with the other claimed limitations for monitoring the load on a mechanical press, a specific "computational device communicatively connected to said speed sensor, said non-contact displacement sensor and said input means, said computational device generating a theoretical no load value of slide displacement based upon the speed of the press and the plurality of press variables, said computational device computing a value of dynamic deflection by computing the difference between the theoretical no load value and the corresponding actual load value of slide displacement, said computational device multiplying the value of dynamic deflection by a value of static stiffness of the mechanical press to determine a value of load on the press at a point of the slide stroke."

6. In light of newly discovered references, the following remarks are also presented:

U.S. Patent No. 5,099,731 to Eigenmann teaches a multi-stroke punch press with a means for correcting the immersion depth and the length of feed comprising a computation device receiving an input corresponding to the speed of the press as well as an input curve and using the speed of the press and the input curve to generate a theoretical slide displacement curve (column 4, lines 18-40).

U.S. Patent No. 4,386,304 to Bergmann et al. teaches a control drive for a ram adjustment device on a blanking press comprising a computational device receiving an input corresponding to the speed of a press as well as an input function and using the speed of the press and input function to generate a theoretical slide displacement curve (column 2, lines 20-32).

U.S. Patent No. 5,409,188 to Takagi et al. teaches a stability compensating mechanism of an electro-hydraulic server system including means for determining a deviation between a no-load ideal piston displacement signal and an actual piston displacement signal (column 3, lines 46-61).

As noted above, the inventions of Eigenmann and Bergmann have similar teachings and both references fail to disclose the generation of the theoretical curve where the tooling die assembly has not been mounted to the slide (i.e. unloaded). While the invention of Takagi does teach comparison of an actual curve to a theoretical no-load curve, the "no-load" condition of Takagi deals with a piston and therefore does not meet the definition of "no-load" as provided by Applicant. Further, the inputted equations/functions are already input by a user and therefore are not generated by the computing means.

More importantly, the inventions of Eigenmann and Bergmann disclose inputting parameters for calculation of the theoretical curve as a "design characteristic curve", in Eigenmann, and a "function of immersion depth e as a function of stroke frequency or ram adjustment as a function of the stroke frequency", in Bergmann. Eigenmann, however, specifically discloses that "such a design characteristic curve is provided for every tool used on this machine" (column 4, lines 23-24) and "a tool-specific design characteristic curve of a known kind" (column 4, lines 51-53). Similarly, Bergmann specifically discloses that, "[t]he function of either immersion depth e or ram adjustment as a function of stroke frequency is ascertained by measurement for each blanking tool to be used on the blanking press" (column 3, lines 24-26). Therefore it can be seen that any modification to the inventions of Eigenmann and Bergmann to specify generation of a theoretical slide displacement curve under no-load conditions would explicitly teach away from the purposes of Eigenmann and Bergmann as well as any modification to input parameters corresponding to the curve/function would correspond to input parameters of the tool as opposed to input parameters of the press, as required in the claimed instant invention.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrww
September 23, 2004

